# SPEC CPU®2017 Integer Rate Result

## Cisco Systems

Cisco UCS C220 M7 (Intel Xeon Platinum 8581V, 2.00GHz)

$SPECrate®2017\_int\_base = 440$

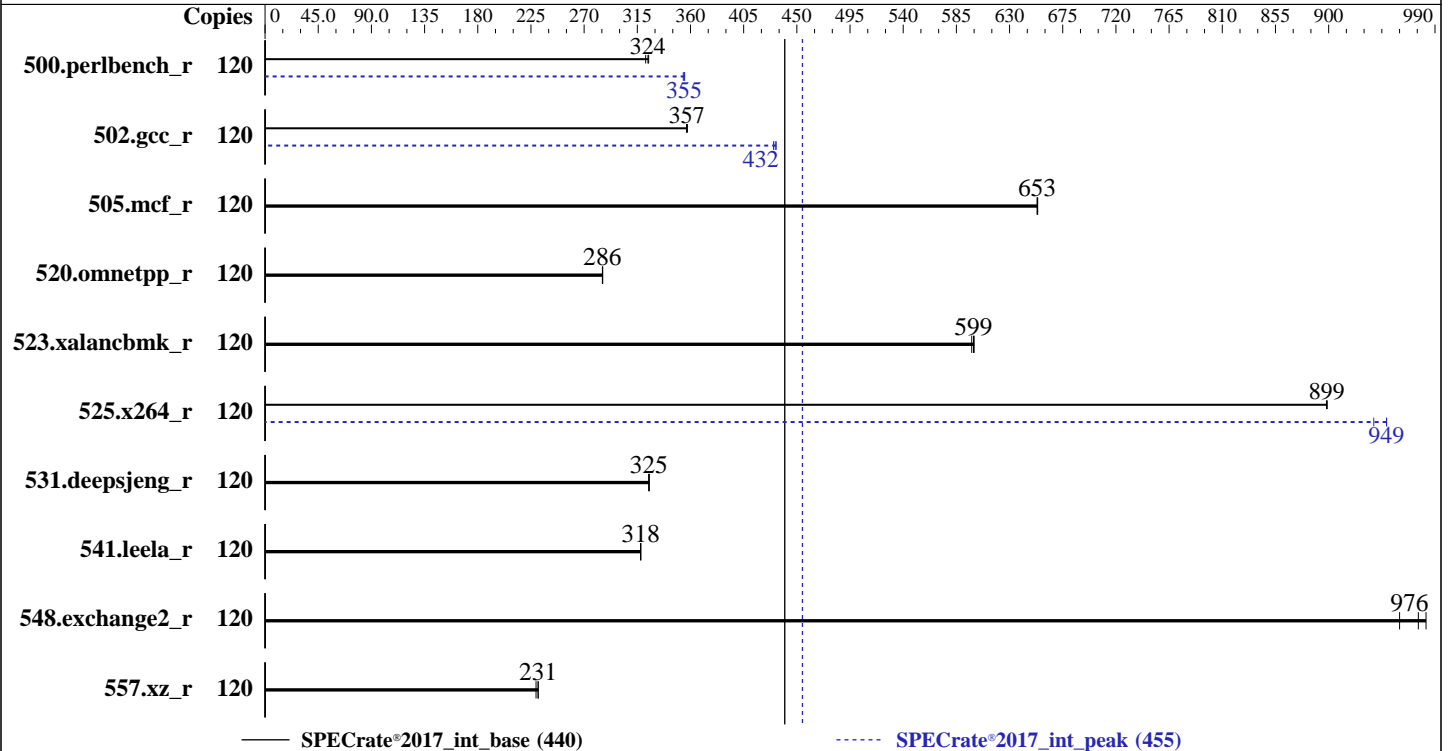$SPECrate®2017\_int\_peak = 455$

**CPU2017 License:** 9019

**Test Sponsor:** Cisco Systems

**Tested by:** Cisco Systems

**Test Date:** Aug-2024

**Hardware Availability:** Feb-2024

**Software Availability:** Mar-2024

| Copies | | |
|---|---|---|
| 500.perlbench_r | 120 | 324 / 355 |
| 502.gcc_r | 120 | 357 / 432 |
| 505.mcf_r | 120 | 653 |
| 520.omnetpp_r | 120 | 286 |
| 523.xalancbmk_r | 120 | 599 |
| 525.x264_r | 120 | 899 / 949 |
| 531.deepsjeng_r | 120 | 325 |
| 541.leela_r | 120 | 318 |
| 548.exchange2_r | 120 | 976 |
| 557.xz_r | 120 | 231 |

Scale: 0 45.0 90.0 135 180 225 270 315 360 405 450 495 540 585 630 675 720 765 810 855 900 990

—— SPECrate®2017_int_base (440)      ----- SPECrate®2017_int_peak (455)

## Hardware

CPU Name: Intel Xeon Platinum 8581V

  Max MHz: 3900

  Nominal: 2000

Enabled: 60 cores, 1 chip, 2 threads/core

Orderable: 1 Chips

Cache L1: 32 KB I + 48 KB D on chip per core

  L2: 2 MB I+D on chip per core

  L3: 300 MB I+D on chip per chip

  Other: None

Memory: 512 GB (8 x 64 GB 2Rx4 PC5-5600B-R, running at 4800)

Storage: 1 x 960 GB M.2 SSD SATA

Other: CPU Cooling: Air

## Software

OS: SUSE Linux Enterprise Server 15 SP4 5.14.21-150400.22-default

Compiler: C/C++: Version 2024.1 of Intel oneAPI DPC++/C++ Compiler for Linux; Fortran: Version 2024.1 of Intel Fortran Compiler for Linux;

Parallel: No

Firmware: Version 4.3.3a released Jan-2024

File System: btrfs

System State: Run level 3 (multi-user)

Base Pointers: 64-bit

Peak Pointers: 32/64-bit

Other: jemalloc memory allocator V5.0.1

Power Management: BIOS set to prefer performance at the cost of additional power usage

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| | |
|---|---|
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## Results Table

| Benchmark | Base | | | | | | Peak | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio | Copies | Seconds | Ratio | Seconds | Ratio | Seconds | Ratio |
| 500.perlbench_r | 120 | 593 | 322 | 589 | 325 | **590** | **324** | 120 | 538 | 355 | **539** | **355** | 540 | 354 |
| 502.gcc_r | 120 | 476 | 357 | **476** | **357** | 475 | 357 | 120 | 393 | 433 | **394** | **432** | 395 | 430 |
| 505.mcf_r | 120 | 297 | 654 | **297** | **653** | 297 | 653 | 120 | 297 | 654 | **297** | **653** | 297 | 653 |
| 520.omnetpp_r | 120 | 551 | 286 | 552 | 285 | **551** | **286** | 120 | 551 | 286 | 552 | 285 | **551** | **286** |
| 523.xalancbmk_r | 120 | **211** | **599** | 212 | 598 | 211 | 600 | 120 | **211** | **599** | 212 | 598 | 211 | 600 |
| 525.x264_r | 120 | **234** | **899** | 234 | 899 | 234 | 898 | 120 | 221 | 949 | **221** | **949** | 224 | 938 |
| 531.deepsjeng_r | 120 | 424 | 325 | 423 | 325 | **423** | **325** | 120 | 424 | 325 | 423 | 325 | **423** | **325** |
| 541.leela_r | 120 | 625 | 318 | **625** | **318** | 625 | 318 | 120 | 625 | 318 | **625** | **318** | 625 | 318 |
| 548.exchange2_r | 120 | 320 | 982 | 327 | 960 | **322** | **976** | 120 | 320 | 982 | 327 | 960 | **322** | **976** |
| 557.xz_r | 120 | **561** | **231** | 561 | 231 | 565 | 229 | 120 | **561** | **231** | 561 | 231 | 565 | 229 |

|  |  |
|---|---|
| **SPECrate®2017_int_base =** | **440** |
| **SPECrate®2017_int_peak =** | **455** |

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Submit Notes

The numactl mechanism was used to bind copies to processors. The config file option 'submit'
was used to generate numactl commands to bind each copy to a specific processor.
For details, please see the config file.

## Operating System Notes

Stack size set to unlimited using "ulimit -s unlimited"

## Environment Variables Notes

Environment variables set by runcpu before the start of the run:
LD_LIBRARY_PATH = "/home/cpu2017/lib/intel64:/home/cpu2017/lib/ia32:/home/cpu2017/je5.0.1-32"
MALLOC_CONF = "retain:true"

## General Notes

Binaries compiled on a system with 2x Intel Xeon Platinum 8280M CPU + 384GB RAM
memory using Red Hat Enterprise Linux 8.4
Transparent Huge Pages enabled by default
Prior to runcpu invocation
Filesystem page cache synced and cleared with:
sync; echo 3>        /proc/sys/vm/drop_caches
runcpu command invoked through numactl i.e.:
numactl --interleave=all runcpu <etc>
NA: The test sponsor attests, as of date of publication, that CVE-2017-5754 (Meltdown)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5753 (Spectre variant 1)
is mitigated in the system as tested and documented.
Yes: The test sponsor attests, as of date of publication, that CVE-2017-5715 (Spectre variant 2)
is mitigated in the system as tested and documented.

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## General Notes (Continued)

```
jemalloc, a general purpose malloc implementation
built with the RedHat Enterprise 7.5, and the system compiler gcc 4.8.5
sources available from jemalloc.net or https://github.com/jemalloc/jemalloc/releases
```

## Platform Notes

```
BIOS Settings:
Sub NUMA Clustering set to Enable SNC2(2-clusters)
ADDDC Sparing set to Disabled
DCU Streamer Prefetch set to Disabled
Enhanced CPU performance set to Auto
LLC Dead Line set to Disabled
Processor C6 Report set to Enabled

 Sysinfo program /home/cpu2017/bin/sysinfo
 Rev: r6732 of 2022-11-07 fe91c89b7ed5c36ae2c92cc097bec197
 running on localhost Tue Aug 13 04:29:08 2024

 SUT (System Under Test) info as seen by some common utilities.

 ------------------------------------------------------------
 Table of contents
 ------------------------------------------------------------
  1. uname -a
  2. w
  3. Username
  4. ulimit -a
  5. sysinfo process ancestry
  6. /proc/cpuinfo
  7. lscpu
  8. numactl --hardware
  9. /proc/meminfo
 10. who -r
 11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
 12. Services, from systemctl list-unit-files
 13. Linux kernel boot-time arguments, from /proc/cmdline
 14. cpupower frequency-info
 15. sysctl
 16. /sys/kernel/mm/transparent_hugepage
 17. /sys/kernel/mm/transparent_hugepage/khugepaged
 18. OS release
 19. Disk information
 20. /sys/devices/virtual/dmi/id
 21. dmidecode
 22. BIOS
 ------------------------------------------------------------


 ------------------------------------------------------------
 1. uname -a
   Linux localhost 5.14.21-150400.22-default #1 SMP PREEMPT_DYNAMIC Wed May 11 06:57:18 UTC 2022 (49db222)
   x86_64 x86_64 x86_64 GNU/Linux


 ------------------------------------------------------------
 2. w
   04:29:08 up 6 min,  1 user,  load average: 0.04, 0.73, 0.50
   USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
   root     tty1     -                04:27   14.00s  1.26s  0.24s -bash

 ------------------------------------------------------------
```

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## Platform Notes (Continued)

```
  3. Username
    From environment variable $USER:  root


    -------------------------------------------------------------
  4. ulimit -a
    core file size          (blocks, -c) unlimited
    data seg size           (kbytes, -d) unlimited
    scheduling priority             (-e) 0
    file size               (blocks, -f) unlimited
    pending signals                 (-i) 2062504
    max locked memory       (kbytes, -l) 64
    max memory size         (kbytes, -m) unlimited
    open files                      (-n) 1024
    pipe size            (512 bytes, -p) 8
    POSIX message queues     (bytes, -q) 819200
    real-time priority              (-r) 0
    stack size              (kbytes, -s) unlimited
    cpu time               (seconds, -t) unlimited
    max user processes              (-u) 2062504
    virtual memory          (kbytes, -v) unlimited
    file locks                      (-x) unlimited


    -------------------------------------------------------------
  5. sysinfo process ancestry
   /usr/lib/systemd/systemd --switched-root --system --deserialize 30
   login -- root
   -bash
   -bash
   runcpu --action=build --action validate --define default-platform-flags --define numcopies=120 -c
     ic2024.1-lin-sapphirerapids-rate-20240308.cfg --reportable --iterations 3 --define smt-on --define
     cores=60 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all -o all
     intrate
   runcpu --action build --action validate --define default-platform-flags --define numcopies=120 --configfile
     ic2024.1-lin-sapphirerapids-rate-20240308.cfg --reportable --iterations 3 --define smt-on --define
     cores=60 --define physicalfirst --define invoke_with_interleave --define drop_caches --tune all
     --output_format all --nopower --runmode rate --tune base:peak --size refrate intrate --nopreenv
     --note-preenv --logfile $SPEC/tmp/CPU2017.172/templogs/preenv.intrate.172.0.log --lognum 172.0
     --from_runcpu 2
   specperl $SPEC/bin/sysinfo
   $SPEC = /home/cpu2017


    -------------------------------------------------------------
  6. /proc/cpuinfo
     model name      : INTEL(R) XEON(R) PLATINUM 8581V
     vendor_id       : GenuineIntel
     cpu family      : 6
     model           : 207
     stepping        : 2
     microcode       : 0x21000200
     bugs            : spectre_v1 spectre_v2 spec_store_bypass swapgs
     cpu cores       : 60
     siblings        : 120
     1 physical ids (chips)
     120 processors (hardware threads)
     physical id 0: core ids 0-59
     physical id 0: apicids 0-119
   Caution: /proc/cpuinfo data regarding chips, cores, and threads is not necessarily reliable, especially for
   virtualized systems.  Use the above data carefully.


    -------------------------------------------------------------
```

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## Platform Notes (Continued)

```
  7. lscpu

From lscpu from util-linux 2.37.2:
  Architecture:                    x86_64
  CPU op-mode(s):                  32-bit, 64-bit
  Address sizes:                   46 bits physical, 57 bits virtual
  Byte Order:                      Little Endian
  CPU(s):                          120
  On-line CPU(s) list:             0-119
  Vendor ID:                       GenuineIntel
  Model name:                      INTEL(R) XEON(R) PLATINUM 8581V
  CPU family:                      6
  Model:                           207
  Thread(s) per core:              2
  Core(s) per socket:              60
  Socket(s):                       1
  Stepping:                        2
  CPU max MHz:                     3900.0000
  CPU min MHz:                     800.0000
  BogoMIPS:                        4000.00
  Flags:                           fpu vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36
                                   clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe syscall nx pdpe1gb rdtscp
                                   lm constant_tsc art arch_perfmon pebs bts rep_good nopl xtopology
                                   nonstop_tsc cpuid aperfmperf tsc_known_freq pni pclmulqdq dtes64 monitor
                                   ds_cpl smx est tm2 ssse3 sdbg fma cx16 xtpr pdcm pcid dca sse4_1 sse4_2
                                   x2apic movbe popcnt tsc_deadline_timer aes xsave avx f16c rdrand lahf_lm
                                   abm 3dnowprefetch cpuid_fault epb cat_l3 cat_l2 cdp_l3 invpcid_single
                                   cdp_l2 ssbd mba ibrs ibpb stibp ibrs_enhanced fsgsbase tsc_adjust bmi1 hle
                                   avx2 smep bmi2 erms invpcid rtm cqm rdt_a avx512f avx512dq rdseed adx smap
                                   avx512ifma clflushopt clwb intel_pt avx512cd sha_ni avx512bw avx512vl
                                   xsaveopt xsavec xgetbv1 xsaves cqm_llc cqm_occup_llc cqm_mbm_total
                                   cqm_mbm_local avx_vnni avx512_bf16 wbnoinvd dtherm ida arat pln pts hwp
                                   hwp_act_window hwp_epp hwp_pkg_req avx512vbmi umip pku ospke waitpkg
                                   avx512_vbmi2 gfni vaes vpclmulqdq avx512_vnni avx512_bitalg tme
                                   avx512_vpopcntdq la57 rdpid bus_lock_detect cldemote movdiri movdir64b
                                   enqcmd fsrm md_clear serialize tsxldtrk pconfig arch_lbr avx512_fp16
                                   amx_tile flush_l1d arch_capabilities
  L1d cache:                       2.8 MiB (60 instances)
  L1i cache:                       1.9 MiB (60 instances)
  L2 cache:                        120 MiB (60 instances)
  L3 cache:                        300 MiB (1 instance)
  NUMA node(s):                    2
  NUMA node0 CPU(s):               0-29,60-89
  NUMA node1 CPU(s):               30-59,90-119
  Vulnerability Itlb multihit:     Not affected
  Vulnerability L1tf:              Not affected
  Vulnerability Mds:               Not affected
  Vulnerability Meltdown:          Not affected
  Vulnerability Spec store bypass: Mitigation; Speculative Store Bypass disabled via prctl and seccomp
  Vulnerability Spectre v1:        Mitigation; usercopy/swapgs barriers and __user pointer sanitization
  Vulnerability Spectre v2:        Mitigation; Enhanced IBRS, IBPB conditional, RSB filling
  Vulnerability Srbds:             Not affected
  Vulnerability Tsx async abort:   Not affected

From lscpu --cache:
      NAME ONE-SIZE ALL-SIZE WAYS TYPE          LEVEL    SETS PHY-LINE COHERENCY-SIZE
      L1d       48K     2.8M   12 Data              1      64        1             64
      L1i       32K     1.9M    8 Instruction       1      64        1             64
      L2         2M     120M   16 Unified           2    2048        1             64
      L3       300M     300M   20 Unified           3  245760        1             64
```

**(Continued on next page)**

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## Platform Notes (Continued)

```
-----------------------------------------------------------
8. numactl --hardware
NOTE: a numactl 'node' might or might not correspond to a physical chip.
  available: 2 nodes (0-1)
  node 0 cpus: 0-29,60-89
  node 0 size: 257680 MB
  node 0 free: 255945 MB
  node 1 cpus: 30-59,90-119
  node 1 size: 257969 MB
  node 1 free: 257038 MB
  node distances:
  node   0   1
    0:  10  12
    1:  12  10


-----------------------------------------------------------
9. /proc/meminfo
   MemTotal:       528025716 kB


-----------------------------------------------------------
10. who -r
   run-level 3 Aug 13 04:23


-----------------------------------------------------------
11. Systemd service manager version: systemd 249 (249.11+suse.124.g2bc0b2c447)
   Default Target  Status
   multi-user      running


-----------------------------------------------------------
12. Services, from systemctl list-unit-files
   STATE            UNIT FILES
   enabled          YaST2-Firstboot YaST2-Second-Stage apparmor auditd cron getty@ haveged irqbalance iscsi
                    issue-generator kbdsettings klog libvirtd lvm2-monitor nscd postfix purge-kernels rollback
                    rsyslog smartd sshd wicked wickedd-auto4 wickedd-dhcp4 wickedd-dhcp6 wickedd-nanny
   enabled-runtime  systemd-remount-fs
   disabled         autofs autoyast-initscripts blk-availability boot-sysctl ca-certificates chrony-wait
                    chronyd console-getty cups cups-browsed debug-shell dnsmasq ebtables exchange-bmc-os-info
                    firewalld gpm grub2-once haveged-switch-root ipmi ipmievd iscsi-init iscsid
                    issue-add-ssh-keys kdump kdump-early kexec-load ksm kvm_stat libvirt-guests lunmask
                    man-db-create multipathd nfs nfs-blkmap nfs-server nfsserver rdisc rpcbind rpmconfigcheck
                    rsyncd serial-getty@ smartd_generate_opts snmpd snmptrapd strongswan strongswan-starter
                    svnserve systemd-boot-check-no-failures systemd-network-generator systemd-nspawn@
                    systemd-sysext systemd-time-wait-sync systemd-timesyncd tcsd udisks2 virtinterfaced
                    virtnetworkd virtnodedevd virtnwfilterd virtproxyd virtqemud virtsecretd virtstoraged
   indirect         pcscd virtlockd virtlogd wickedd


-----------------------------------------------------------
13. Linux kernel boot-time arguments, from /proc/cmdline
   BOOT_IMAGE=/boot/vmlinuz-5.14.21-150400.22-default
   root=UUID=2e0ad397-074a-46f8-9f0a-5231b03b9d87
   splash=silent
   mitigations=auto
   quiet
   security=apparmor


-----------------------------------------------------------
14. cpupower frequency-info
   analyzing CPU 0:
     current policy: frequency should be within 800 MHz and 3.90 GHz.
```

**(Continued on next page)**

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## Platform Notes (Continued)

```
                   The governor "performance" may decide which speed to use
                   within this range.
      boost state support:
        Supported: yes
        Active: yes


    ----------------------------------------------------------------
    15. sysctl
      kernel.numa_balancing              1
      kernel.randomize_va_space          2
      vm.compaction_proactiveness       20
      vm.dirty_background_bytes          0
      vm.dirty_background_ratio         10
      vm.dirty_bytes                     0
      vm.dirty_expire_centisecs       3000
      vm.dirty_ratio                    20
      vm.dirty_writeback_centisecs     500
      vm.dirtytime_expire_seconds    43200
      vm.extfrag_threshold             500
      vm.min_unmapped_ratio              1
      vm.nr_hugepages                    0
      vm.nr_hugepages_mempolicy          0
      vm.nr_overcommit_hugepages         0
      vm.swappiness                      1
      vm.watermark_boost_factor      15000
      vm.watermark_scale_factor         10
      vm.zone_reclaim_mode               0


    ----------------------------------------------------------------
    16. /sys/kernel/mm/transparent_hugepage
      defrag         [always] defer defer+madvise madvise never
      enabled        [always] madvise never
      hpage_pmd_size 2097152
      shmem_enabled   always within_size advise [never] deny force


    ----------------------------------------------------------------
    17. /sys/kernel/mm/transparent_hugepage/khugepaged
      alloc_sleep_millisecs   60000
      defrag                      1
      max_ptes_none             511
      max_ptes_shared           256
      max_ptes_swap              64
      pages_to_scan            4096
      scan_sleep_millisecs    10000


    ----------------------------------------------------------------
    18. OS release
      From /etc/*-release /etc/*-version
      os-release SUSE Linux Enterprise Server 15 SP4


    ----------------------------------------------------------------
    19. Disk information
    SPEC is set to: /home/cpu2017
      Filesystem      Type   Size  Used Avail Use% Mounted on
      /dev/sda2      btrfs  445G   22G  422G   5% /home


    ----------------------------------------------------------------
    20. /sys/devices/virtual/dmi/id
        Vendor:        Cisco Systems Inc
        Product:       UCSC-C220-M7S
```

**(Continued on next page)**

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## Platform Notes (Continued)

```
     Serial:         WZP2702091W


   ----------------------------------------------------------
 21. dmidecode
   Additional information from dmidecode 3.2 follows.  WARNING: Use caution when you interpret this section.
   The 'dmidecode' program reads system data which is "intended to allow hardware to be accurately
   determined", but the intent may not be met, as there are frequent changes to hardware, firmware, and the
   "DMTF SMBIOS" standard.
   Memory:
     8x 0xCE00 M321R8GA0PB0-CWMCH 64 GB 2 rank 5600, configured at 4800


   ----------------------------------------------------------
 22. BIOS
 (This section combines info from /sys/devices and dmidecode.)
   BIOS Vendor:       Cisco Systems, Inc.
   BIOS Version:      C220M7.4.3.3a.0.0118241337
   BIOS Date:         01/18/2024
   BIOS Revision:     5.32
```

## Compiler Version Notes

```
==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
         | 557.xz_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C        | 502.gcc_r(peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on IA-32, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C        | 500.perlbench_r(base, peak) 502.gcc_r(base) 505.mcf_r(base, peak) 525.x264_r(base, peak)
         | 557.xz_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------


==============================================================================
C++      | 520.omnetpp_r(base, peak) 523.xalancbmk_r(base, peak) 531.deepsjeng_r(base, peak)
         | 541.leela_r(base, peak)
------------------------------------------------------------------------------
Intel(R) oneAPI DPC++/C++ Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

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## Compiler Version Notes (Continued)

```
==============================================================================
Fortran | 548.exchange2_r(base, peak)
------------------------------------------------------------------------------
Intel(R) Fortran Compiler for applications running on Intel(R) 64, Version 2024.1.0 Build 20240308
Copyright (C) 1985-2024 Intel Corporation. All rights reserved.
------------------------------------------------------------------------------
```

## Base Compiler Invocation

C benchmarks:
icx

C++ benchmarks:
icpx

Fortran benchmarks:
ifx

## Base Portability Flags

500.perlbench_r: -DSPEC_LP64 -DSPEC_LINUX_X64
502.gcc_r: -DSPEC_LP64
505.mcf_r: -DSPEC_LP64
520.omnetpp_r: -DSPEC_LP64
523.xalancbmk_r: -DSPEC_LP64 -DSPEC_LINUX
525.x264_r: -DSPEC_LP64
531.deepsjeng_r: -DSPEC_LP64
541.leela_r: -DSPEC_LP64
548.exchange2_r: -DSPEC_LP64
557.xz_r: -DSPEC_LP64

## Base Optimization Flags

C benchmarks:
-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc

C++ benchmarks:
-w -std=c++14 -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math
-flto -mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc

**(Continued on next page)**

Standard Performance Evaluation Corporation (info@spec.org) https://www.spec.org/

## Cisco Systems

Cisco UCS C220 M7 (Intel Xeon Platinum 8581V, 2.00GHz)

SPECrate®2017_int_base = 440

SPECrate®2017_int_peak = 455

**CPU2017 License:** 9019
**Test Sponsor:** Cisco Systems
**Tested by:** Cisco Systems

**Test Date:** Aug-2024
**Hardware Availability:** Feb-2024
**Software Availability:** Mar-2024

# Base Optimization Flags (Continued)

Fortran benchmarks:
```
-w -m64 -Wl,-z,muldefs -xsapphirerapids -O3 -ffast-math -flto
-mfpmath=sse -funroll-loops -qopt-mem-layout-trans=4
-nostandard-realloc-lhs -align array32byte -auto
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc
```

# Peak Compiler Invocation

C benchmarks:
```
icx
```

C++ benchmarks:
```
icpx
```

Fortran benchmarks:
```
ifx
```

# Peak Portability Flags

500.perlbench_r: `-DSPEC_LP64 -DSPEC_LINUX_X64`
502.gcc_r: `-D_FILE_OFFSET_BITS=64`
505.mcf_r: `-DSPEC_LP64`
520.omnetpp_r: `-DSPEC_LP64`
523.xalancbmk_r: `-DSPEC_LP64 -DSPEC_LINUX`
525.x264_r: `-DSPEC_LP64`
531.deepsjeng_r: `-DSPEC_LP64`
541.leela_r: `-DSPEC_LP64`
548.exchange2_r: `-DSPEC_LP64`
557.xz_r: `-DSPEC_LP64`

# Peak Optimization Flags

C benchmarks:

500.perlbench_r: `-w -std=c11 -m64 -Wl,-z,muldefs`
`-fprofile-generate`(pass 1)
`-fprofile-use=default.profdata`(pass 2) `-xCORE-AVX2`(pass 1)
`-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse`

**(Continued on next page)**

## Cisco Systems

Cisco UCS C220 M7 (Intel Xeon Platinum 8581V, 2.00GHz)

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| | |
|---|---|
| **CPU2017 License:** 9019 | **Test Date:** Aug-2024 |
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# Peak Optimization Flags (Continued)

500.perlbench_r (continued):
```
-funroll-loops -qopt-mem-layout-trans=4
-fno-strict-overflow
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc
```

502.gcc_r: `-m32 -L/opt/intel/oneapi/compiler/2024.1/lib32 -std=gnu89`
```
-Wl,-z,muldefs -fprofile-generate(pass 1)
-fprofile-use=default.profdata(pass 2) -xCORE-AVX2(pass 1)
-flto -Ofast -xCORE-AVX512 -ffast-math -mfpmath=sse
-funroll-loops -qopt-mem-layout-trans=4
-L/usr/local/jemalloc32-5.0.1/lib -ljemalloc
```

505.mcf_r: `basepeak = yes`

525.x264_r: `-w -std=c11 -m64 -Wl,-z,muldefs -xsapphirerapids -Ofast`
```
-ffast-math -flto -mfpmath=sse -funroll-loops
-qopt-mem-layout-trans=4 -fno-alias
-L/opt/intel/oneapi/compiler/2024.1/lib -lqkmalloc
```

557.xz_r: `basepeak = yes`

C++ benchmarks:

520.omnetpp_r: `basepeak = yes`

523.xalancbmk_r: `basepeak = yes`

531.deepsjeng_r: `basepeak = yes`

541.leela_r: `basepeak = yes`

Fortran benchmarks:

548.exchange2_r: `basepeak = yes`

The flags files that were used to format this result can be browsed at
```
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.html
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-EMR-revD.html
```

You can also download the XML flags sources by saving the following links:
```
http://www.spec.org/cpu2017/flags/Intel-ic2024-official-linux64.xml
http://www.spec.org/cpu2017/flags/Cisco-Platform-Settings-V1.0-EMR-revD.xml
```

# SPEC CPU®2017 Integer Rate Result

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## Cisco Systems

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SPECrate®2017_int_base = 440

SPECrate®2017_int_peak = 455

**CPU2017 License:** 9019
**Test Sponsor:** Cisco Systems
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**Test Date:** Aug-2024
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For questions about this result, please contact the tester.  For other inquiries, please contact info@spec.org.

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